Toxic Substances and Areas of Concern

funded by the Great Lakes Restoration Initiative

NOAA is working to confront toxics in the Great Lakes. While concentrations of some persistent toxic substances have been significantly reduced in the Great Lakes over the past 30 years, toxins such as polychlorinated biphenyls (PCBs) are still above levels considered safe for humans and wildlife, warranting fish consumption advisories in all five Great Lakes. In addition, chemicals of emerging concern, such as pharmaceuticals, are now being detected in the Great Lakes. NOAA is evaluating hazards from toxic substances so that regulatory and management responses can protect human and ecosystem health.

Enhanced NOAA Mussel Watch in the Great Lakes

NOAA's Mussel Watch Program monitors the status and trends of chemical contamination and associated effects in US coastal waters, including the Great Lakes. GLRI funds have allowed NOAA to place special emphasis on contaminants of emerging concern (CECs), through the evaluation of exposure and bioeffects to mussels. The tissues of mussels, which are filter feeders, are a valuable resource for analyzing chemical and biological contaminant trends. To evaluate implications of CECs, Mussel Watch conducts field monitoring to assess biomarker and/or omics assays on mussels, which provide information on endpoints such as energy metabolism and growth. Expanding the MWP to include CECs is an important complement to AOC remediation investments.

Modeling Atmospheric Mercury Deposition

Regional and global sources continue to deposit mercury to the Great Lakes via the air. Mercury can affect the human nervous system, fish, and wildlife. The most common way that people are exposed to mercury is by eating contaminated fish or shellfish. NOAA is using model output to determine the amount, source, and types of atmospheric mercury deposited in the Great Lakes. Project results will be critical to identifying actions and policies to reduce atmospheric mercury loading in the Great Lakes.

Great Lakes DIVER Data Warehouse, Visualization, and Query Tool for AOCs

High-quality data is critical for decision-making to improve the environment and human health. Thanks in part to GLRI funds, NOAA has been able to transition to a new data warehouse, visualization, and custom query tool called Great Lakes Data Integration, Visualization, Exploration, and Reporting (GL DIVER). Great Lakes DIVER includes all the contaminant chemistry data from Query Manager, as well as benthic and biological datasets. NOAA is currently working with the St. Louis River AOC managers to understand management needs specific to AOCs and subsequently build additional functions in to GL DIVER to address those needs. This gives decision makers and concerned citizens the ability to query across the most comprehensive and highest quality environmental contaminant dataset available. The outcome: accelerated development, implementation, and monitoring of sediment cleanup and restoration projects in the region.

Technical Assistance for AOCs

NOAA is working with partners to advise on and support the design and implementation of sediment removal and habitat improvement projects in Great Lakes Areas of Concern.

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Great Lakes RESTORATION

www.regions.noaa.gov/great-lakes/index.php/great_lakes-restoration-initiative